

APPENDIX B

1. Tarrant Community College

Tarrant County College (TCC) has used ITFS to create the largest community college distance education program in Texas. Via ITFS, college courses are broadcast 24 hours a day, seven days a week to campus satellite locations and private residences in and around Fort Worth, Texas, serving more than 6,600 students. TCC can effectively reach their widely dispersed student body at low prices, thanks to ITFS, helping to keep tuition affordable for students. With over thirty years of distance education experience, TCC educators have found ITFS to be one of the most popular answers to their distance education needs.

TCC's students are older than stereotypical college students, and most are balancing education and employment. TCC's course offerings reflect both their need for course programming compatible with their work schedule and for coursework relevant to their professional lives. Classes are therefore available between 6am and 11:30pm daily. Although courses are currently tied to the actual campus semester schedule, changes are underway to create a staggered schedule in which students can begin instruction at any time. Many students who cannot find the time or are physically unable to visit a satellite campus location are able to take classes from home, thanks to the ITFS system's reach.

TCC has leased a portion of their ITFS spectrum to MCI WorldCom Broadband Solutions in exchange for technical and financial support. The money received from this relationship is reinvested in TCC's distance learning program, helping to fund technical assistance, add new programming, and bring down the general cost of student use. In the rural areas surrounding Fort Worth, businesses as well as educators are receiving services that would be completely unattainable without wireless ITFS.

Bob Frost, Director of Instructional Support Services at TCC, sees ITFS as the key to providing effective course material through the Internet as well. Students need reliable cost-effective broadband access to use bandwidth-intensive course materials and video programming. Where students and school districts are not wired for this capability, ITFS provides the most cost-effective solution, and, in many rural outlying areas, ITFS provides the only broadband solution likely to come along in the foreseeable future.

2. Central Dakota Telecommunications Consortium

The Central Dakota Telecommunications Consortium (CDTC) has successfully connected students in North Dakota to creative distance learning via a wireless ITFS-based system. In a state where the distance between schools can reach up to 50 miles, ITFS has proved the only way to connect students and teachers in an efficient and cost-effective manner. The system has been created with an original investment of one million dollars in federal and state grants. Eliminating the requirement that the ITFS provide educational services would not only disconnect the North Dakota population from the access they need, but throw away the hard earned money that went into implementing the system.

In the past, North Dakota school districts have found it very difficult to provide students with courses in foreign language, upper division mathematics, psychology, sociology, art, family and consumer science, and agriculture. Individual districts were often too undersized to support a full-time position in these fields, districts were forced to cut staff or drop the subjects

entirely. ITFS has dissolved this problem by allowing districts to “team-up” in hiring full-time teachers and share these talented teachers and provide students access to quality instruction in a number of districts at the same time.

CDTC has established a two-way Interactive Television (ITV) system that transmits live, high quality audio and video between several sites at once. An instructor at the home site can interact and receive questions from students at any of these destinations. Twelve ITFS channels are used two at a time to bring each school district 16 courses daily. An additional three channels are shared with a wireless cable television company called Central Dakota TV, in exchange for tower space needed for each school’s ITFS equipment. Because broadband access is usually impossible to implement due to the rural location and the small population base, CDTC leased excess capacity to Dakota TV which provides wireless broadband internet services.

3. University of Minnesota

The University of Minnesota has delivered high-quality educational programming to distance learners for thirty-two years. In addition to traditional classes for degree and non-degree students in the greater Minneapolis-St. Paul area (including neighboring Rochester, MN and Chippewa Falls, WI) and ITFS has allowed for a unique partnership between the University and industry to promote the life-long-learning that experts agree is essential to keep workers competitive.

UNiversity-Industry Television for Education (UNITE) grew out of the pressing need of employers in the area to provide employees with rigorous, ongoing professional education. Currently, employees at the 28 member companies — including IBM, 3-M, and Seagate – obtain credit and noncredit courses at 32 corporate sites. The courses offered by ITFS have become an invaluable resource that local companies use to attract and retain valuable employees. Corporate students are kept abreast of the latest technological advancements by viewing non-credit short courses, colloquia and seminars originated from various college departments.

According to the recently released Report of the Web-Based Education Commission to the President and the Congress of the United States, students over the age of 24 increased 235% between 1970 and 1993. In keeping with this national trend, Minnesota’s distance education students are generally twenty-five to forty-five year old people who never attend classes on campus. Nonetheless, live ITFS broadcast classes allow distance learners to attend class simultaneously with campus-based students with voice interaction capability using the H4 channel and speed-dial telephones. This interaction between off-site and on-site students has proven invaluable; the campus-based students benefit enormously from the “real world” experience of the remote students and class discussions are lively and productive.

Annually, on average, 500 professionals register for courses. Without this program students located across the Twin Cities and in Rochester, MN, ninety miles away from the University of Minnesota campus, would have no convenient access to courses that can lead to either a bachelors or masters degree in a variety of engineering subjects. Degree and non-degree courses are offered on Computer Science, Computer Engineering, Electrical Engineering, Mechanical Engineering and Biomedical Engineering. Each year approximately 35 students obtain their Master’s Degree attending one or more of the approximately 55 courses offered per semester at non-campus locations.

4. Kirkwood Community College

Kirkwood Community College's use of ITFS system is a shining example of the benefits these licenses can bring to a rural, education-hungry region. Kirkwood Community College serves seven counties in east central Iowa, covering 4,300 square miles and a population of over 350,000 people. Given this enormous area and the low population density, ITFS is the ideal low-cost, high impact delivery mechanism for both degree seeking students and those in search of continuing education opportunities. In addition, Kirkwood Community College plans to leverage its excess ITFS capacity to bring affordable high speed Internet service and Video On Demand to K-12 schools and its own Learning Centers in its seven county area. Higher education in this rural area can be difficult to access given the large distances between communities and colleges. Therefore, Kirkwood Community College broadcasts 60 hours a week of live, interactive (through two way audio) classes that can be applied towards a general Associates degree. In the fall semester of 2003, 525 students are taking 16 classes, with the vast majority attending class at remote receive sites. An additional 7 hours per week broadcast live, interactive Continuing Education courses. The continuing education classes enrolled 1200 students in 25 classes during the year 2002.

Through ITFS links with cable TV, this valuable educational programming is available to communities in a 35-mile radius from the main campus in Cedar Rapids, and can be seen in over 95,000 homes subscribing to cable television. The central objective of this cable TV network is to offer college credit tele-courses both in semester and block formats, allowing students to earn college credit at their own pace and in their own homes. 4,800 students are enrolled in credit courses via this ITFS cable channel, and untold numbers have access to high-quality, educational programming at their leisure.

Kirkwood Community College is currently negotiating with private telecommunications companies to lease its excess ITFS capacity in exchange for providing affordable high-speed Internet access to K-12 schools in the seven county area. While some of these schools currently receive Internet service from a state owned fiber optic system, that wire usually terminates at the local high school building, leaving districts with the daunting task of connecting each of the schools in the district. As a result, some school districts cannot deliver the Internet to its other buildings, including lower and middle schools. Kirkwood's partnership with a private telecommunications company would bring higher quality Internet to most local schools than is currently available. The importance of the Internet in the classroom cannot be underestimated; the Report of the Web-Based Education Commission to the President and the Congress of the United States found that the ability to use the Internet is an essential skill if students plan to seek a university education.

Kirkwood also hopes to expand its ITFS system to provide video on demand in the future. Currently instructors and students located at Cedar Rapids can request an instructional videotape to be played on the campus's cable TV system for viewing. However, the 10 remote learning centers connected to the network do not have access to the 2000 tapes in this impressive video library. With the advent of two-way digital services, Kirkwood plans to use its ITFS capacity to offer on-demand video programming to off-campus students and instructors. This capacity could also be used to bring video content directly to local K-12 schools. The revenues that Kirkwood will earn by leasing its excess capacity will go to supporting and expanding its distance-learning project, a sustaining infusion for the cash-strapped community

college. In addition, the savings realized by local public schools with broadband Internet access will only be outstripped by the immeasurable educational benefits enjoyed by the students.

5. California State University, Long Beach

Through ITFS, numerous civil servants throughout the State of California receive the training they need to ensure high-quality public administration. Cal State Long Beach's Masters in Public Administration (MPA) has trained a broad range of civic leaders in the state, from local city administrators to state transportation officials, contributing to improved services in essential areas. Thanks to the convenience and flexibility offered by ITFS, many public servants have been able to hone their administrative skills by taking classes during times that best accommodate their work schedule. In addition, ITFS broadcasts provide a valuable forum for communication between the University and the community in which it resides.

Cal State Long Beach is a largely commuter campus, serving 30,000 full and part-time students. ITFS is a critical part of the University's mission to deliver educational opportunities to this large area just south of Los Angeles. Recognizing the need to give exceptional civil servants the training they needed to provide top-notch public services, Cal State Long Beach, several municipalities and other agencies together developed the Masters in Public Administration (MPA) program. Each year approximately thirty to fifty local government workers and civil servants attend courses from their workplace or other conveniently located sites. Current "rising stars" at the Police Department, the Orange County Department of Transportation and several mayors' offices were all students in the MPA program.

In addition to producing and transmitting the MPA programming, students and administrators on campus broadcast training seminars and conferences for corporations and government agencies that rely on the University's ITFS capacity. Cal State Long Beach regularly creates programs for McGraw-Hill Publishing and the Department of Justice's National Institute of Corrections, often reaching more than 1,000 training sites and over 10,000 trainees statewide.

The ITFS capacity used by Cal State Long Beach more than doubled when Pacific Bell began sharing the spectrum with the University. In exchange for some capacity, Pacific Bell implemented digital technology transmission, installing new equipment on campus at receive sites. The digital conversion has allowed Cal State Long Beach to double its ITFS programming while still freeing up excess capacity to lease to current corporate partner Nextel in order to support both the distance education program and community outreach efforts.

6. Denver Public Schools

The Denver Public Schools (DPS) have overcome their budget limitations for specialized resource teachers by using the ITFS system to bring live classroom programming to its students in Math, Science, Foreign Language, and the Arts. In addition, the ITFS system is used to provide essential continuing education for its workforce, and to maximize the potential of its teaching body. The future of Denver public education depends on this essential educational medium.

Carolyn Williams is a "team teacher" in the Denver Public Schools System. One of six special resource "TV teachers," Carolyn compliments classroom teachers at 89 elementary schools in the area. As few elementary school teachers are expert in all educational subjects, the

ITFS-based “team teaching” approach gives curricula greater breadth while efficiently providing professional development for classroom teachers. The “TV teachers” provide classes in Science, Spanish, French, Art, Social Studies and Math that are exciting and dynamic; they provide a springboard for classroom teachers, and energize students with ideas and materials that would be otherwise unavailable to individual classes. Up to eight groups may participate at once and the lively interaction is encouraged by the two-way audio connection.

ITFS also provides on site teacher training. Denver-specific courses are developed in the District’s studios to complement the training offered by Harvard University, the Smithsonian Institution, and other organizations. Over 4,000 teachers have convenient access to the incremental training they need to stay current on educational trends and substantive issues. The programming is available eighteen hours a day, increasing their utilization and cutting down on substitute costs for the school system.

Four Denver schools serving neighborhoods with concentrations of immigrants broadcast ITFS-based ESL classes. Taking advantage of the fact that 78% of the 72,416 students in the district qualify for breakfast before school, ESL classes are broadcast early in the morning; while their children eat breakfast, parents and their pre-schoolers “attend” Carolyn’s ESL class. The result is that more adults pass English competency tests and become US citizens, as well as increasing the parent’s feeling of linkage and investment in the school, a crucial factor for school success.

The financial troubles that plagued the Denver Public Schools forced it to eliminate the district’s elementary art program. Thanks to ITFS, Art is now available with one teacher, Jennifer Crawford, broadcasting art instruction to the district’s 89 elementary schools. Using a document camera in her studio, students in the classroom are able to see procedures for the day’s lesson and participate in their own classrooms in real-time. ITFS “is essential to my class,” Jennifer said. “It is the most effective and economical way to teach art in a large school district like Denver.” Jennifer has approximately two hundred young artists and up to eight teachers watching her in each session. When she isn’t in her studio-classroom teaching art, Jennifer visits her students personally.

The Denver Public Schools System has signed a contract with Sprint Broadband Solutions Group to license two of its ITFS channels. In exchange, Sprint Broadband Solutions Group pays the district a monthly fee and installs and maintains the school receive sites. The funding provided by Sprint is used entirely to help offset the costs of running the ITFS-based educational program.

ITFS has allowed the district to extend the school day. Thirty-six DPS elementary schools host after school programs. Courses, much like the daily elementary classes, are broadcast to the sites with two-way audio available to allow for interaction among sites and with the teacher. Educational programming delivered to multiple sites through ITFS has enabled excellence in programming and have led to academic improvement for our urban school students. Because of improved scores on state tests and overall achievement, Colorado Governor Bill Owens awarded DPS the 2002 Distinguished Improvement Award. Many variables go into these dramatic results but we can’t ignore the role of ITFS which allows excellent instruction to reach ALL students and excellent staff development to reach ALL teachers.

7. Houston, Texas Region IV

The greater Houston metropolitan area (Region IV) contains 25% of the student population the entire the state of Texas. With 54 school districts serving almost a million students daily, educators continuously struggle to provide equal opportunities for this diverse group of students. ITFS has helped them tackle this challenge successfully by providing a path for high speed Internet access and distance learning to students throughout Region IV. Educational programming through ITFS is available to more than 1100 school campuses in the Region IV ESC service area.

Region IV represents schools within the urban environment of Houston as well as its rural surrounding areas, and airs a broad range of programming to meet the varied needs of this population. For instance, the ITFS system brings advanced math, science, and language courses to students that would otherwise not have access to courses because of a lack of teachers, low density student populations that make it impossible for districts to support or to offer advanced programs as electives that could not be provided without access to ITFS programs. In addition, Region IV ESC provides enrichment, field trips, and professional development programs using the ITFS system. Programs such as “Colonial Williamsburg” offer a unique and quality educational opportunity for students in Region IV ESC’s service area.

These distance-learning courses are integral to providing students with access to course material that they otherwise would not receive. In the existing economic environment for education, programs and resources are being seriously limited. ITFS is a resource that allows districts to leverage their capital, equipment, and human resources to make a significant impact on student learning and achievement. Master teachers share their knowledge and skills with others in professional development. Students receive advanced courses in French and German as well as other core subjects. Schools have access to specialty programs that include NASA, the Smithsonian, national museums and zoos, all activities that are not accessible without the support of ITFS.

The Region IV consortium leases a portion of their ITFS spectrum to the Sprint Wireless Broadband Group in exchange for a monthly fee. This revenue covers the complete cost of their distance education programming and allows for greater expansion of services. Because control comes from educators while Sprint serves strictly as a licensee, the fundamental aims and usage of ITFS are not lost but only enhanced with the benefit of this partnership. This agreement allows Region IV ESC to provide a number of services that directly impact students and educators at significantly reduced costs. Without this agreement some programs currently provided would have to be reduced or eliminated to the detriment of the students and educators served.

ITFS is an integral component of education in Region IV ESC. Its success is measured by the students who graduate and go on to college, who have the skills to be contributing members of the workforce, and by teachers who improve their skills as a result of the professional development acquired through access to the ITFS system.